

2004 GYIBC ANNUAL REPORT

(Jan 1, 2004 - June 30, 2005)

Written by members of the Executive Committee,
Technical, and Information Education Subcommittees



GYIBC



Greater Yellowstone Interagency Brucellosis Committee

Idaho Department of Fish and Game • Montana Department of Fish, Wildlife and Parks • Wyoming Game and Fish Department • Idaho Department of Agriculture
Montana Department of Livestock • Wyoming Livestock Board • U.S.D.A. Forest Service • U.S.D.A. Animal and Plant Health Inspection Service • U.S.D.A. Agricultural Research Service
U.S.D.I. Fish and Wildlife Service • U.S.D.I. National Park Service • U.S.D.I. Bureau of Land Management • U.S.D.I. National Biological Service

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web browser to: <http://gyibc.com>



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GOAL, MISSION, AND OBJECTIVES OF THE GREATER YELLOWSTONE INTERAGENCY BRUCELLOSIS COMMITTEE (GYIBC)

GOAL: It is the *Goal* of the Greater Yellowstone Interagency Brucellosis Committee (GYIBC) to protect and sustain the existing free-ranging elk and bison populations in the Greater Yellowstone Area (GYA) and protect the public interests and economic viability of the livestock industry in Wyoming, Montana and Idaho.

MISSION: Toward this end it is the *Mission* of the GYIBC to facilitate the development and implementation of brucellosis management plans for elk and bison in the GYA.

OBJECTIVES: This will be accomplished by subscribing to the following management *Objectives* which will, in turn, guide the GYIBC;

- Recognize and maintain existing state and federal jurisdictional authority for elk, bison and livestock in the GYA;
- Maintain numerically, biologically and genetically viable elk and/or bison populations in the respective states, national parks and wildlife refuges;
- Maintain the brucellosis-free status of Wyoming, Montana and Idaho and protect the ability of producers in the respective states to freely market livestock;
- Eliminate brucellosis-related risks to public health;
- Eliminate the potential transmission of *Brucella abortus* among elk, bison and livestock;
- Coordinate brucellosis-related management activities among all affected agencies;
- Base brucellosis-related management recommendations on defensible and factual information while encouraging and integrating new advances and technology;
- Aggressively seek public involvement in the decision making process;
- Communicate to the public factual information about the need to prevent the transmission of brucellosis, the need for its eradication and the rationale for related agency management actions; and
- Plan for the elimination of *Brucella abortus* from the GYA by the year 2010



EXECUTIVE SUMMARY

This annual report is intended to provide the reader the highlights of GYIBC activities for 2004 calendar year. The principle author(s) is listed on each topic so that they may be contacted if more detailed information is desired. This Executive Summary is intended to further summarize the report, by providing just a few key points from each section.

The **Memorandum of Understanding (MOU)** continues to be in a state of draft and review. The three states, Idaho, Montana, and Wyoming are in the process of reviewing and analyzing a “federal” draft MOU, and at this time agreement had not been made.

A study was conducted to determine the **spatial dynamics of elk in the Upper Madison**. Hunter harvested elk were collected (n=142) from various locations in the Madison Valley. *Brucella abortus* occurred in 4.9% of those samples. A study to examine spatial dynamics of elk at a coarse and fine scale was developed in 2004. MFWP is monitoring the movements and seasonal use, as well as brucellosis exposure of thirty-seven elk that are fitted with GPS collars.

In the winter of 2004, WGFD began the **Wyoming elk brucellosis study plan**, to determine why this unexpected increase in prevalence was occurring on the Alpine feedground. With this opportunity to collect both blood and tissue samples, researchers are attempting to develop PCR tests, DNA fingerprinting of *Brucella abortus*, determine the correlation between serological titers and culture results, and conduct a herd health survey.

On January 21, 2004 state veterinarians and Wyoming producers were notified that a **second infected herd was found in Wyoming** and that APHIS would downgrade brucellosis free status to Class A status. Additional testing identified two cattle herds in Teton County and one Campbell County herd as positives for brucellosis. The herd in Campbell County is outside of the GYA and known brucellosis infection of elk and bison. Samples were later found to have been contaminated at the Animal Disease Research and Diagnostic Lab in Brookings, SD.

Wyoming Governor, Dave Freudenthal, initiated the **Wyoming State Brucellosis Coordination Team** to identify issues, best management practices, and develop recommendations relating to brucellosis in wildlife and livestock. The team presented twenty-eight recommendations for the Governor and Wyoming State Legislature to consider.

Under the **Idaho Brucellosis Management Plan**, the Idaho Fish and Game Commission continues to manage elk populations of a given area to naturally support elk and provide a huntable surplus. Brucellosis surveillance continues through trapped elk and hunter brucellosis sample kits. IDFG and ISDA have provided fencing for numerous stock yards and enhanced high quality winter and spring range to minimize elk/cattle interaction.

Montana enhanced surveillance for brucellosis in free-ranging wildlife by surveying all three elk management units during the 2004-05 hunting season. Despite aggressive efforts results were limited due to small sample sizes. An increased seroprevalence (6.9%) was found in the Madison elk management unit. During 2004, 31.3% of grizzly bears and 25.8% of black bears tested for brucellosis were found to be seropositive.



As part of the Wyoming Game and Fish Department's **Brucellosis-Feedground-Habitat (BFH) program**, a total of 258 elk were trapped and tagged at four feedgrounds during the 2004 trapping season. A total of 96 test-eligible female elk were bled for brucellosis evaluation. A total of 3,325 elk calves were vaccinated at 19 state feedgrounds. A total of 2,132 elk calves were vaccinated on the National Elk Refuge. During the 2005 trapping season 573 elk were trapped and tagged at six feedgrounds with 175 test eligible female elk. Strain 19 calfhood vaccination was again successful in 2005.

The three states in the GYA and APHIS began discussions in 2004 on a **risk assessment matrix to identify surveillance** needs in untested livestock herds at risk for brucellosis transmission from wildlife.

A draft bison and **elk management plan and environmental impact statement** for the National Elk Refuge and Grand Teton National Park is scheduled to be published for public review in July 2005. Six alternatives or actions for management are identified in the plan. The final plan/EIS is expected to be complete by the end of 2006.

The **Interagency Bison Management Plan** partners have completed the fifth season of operation in June of 2005. Implementation has included research, annual management actions to minimize risk of brucellosis transmission from bison to cattle, and further planning to adapt the management strategy. The additional planning efforts have been focused on broadening the bison vaccination program to include vaccinating calves and yearlings at the west Special Management Area (SMA) and development of an in-park remote vaccination strategy. Management actions at the two SMA's have been successful at keeping bison and cattle from commingling and consequently maintaining the brucellosis class-free designation for the State of Montana.

Six articles are included throughout this report to describe these aspects of the interagency plan to preserve the Yellowstone bison population. Research activities have focused on learning more about the probability of pregnant sero-negative adult bison sero-converting to positive reactors, and identifying the proportion of those animals released after capture and testing which give birth outside the National Park and abort the diagnosed pregnancy. Agency partners (APHIS and MT FWP) have initiated a new research project to study the feasibility of certifying bison brucellosis free following a rigorous protocol described in the IBMP.

Public participation in the GYIBC continued to increase in 2004. The GYIBC held four regular meeting during the time of this annual report. Each meeting was open for public attendance and comment. The GYIBC produced its first annual report in 2004, which can be viewed at <http://gyibc.com/>

United States Animal Health Association (USAHA) is holding a workshop to examine brucellosis vaccine research, delivery, and live animal diagnostic capabilities. Vaccination has historically been utilized with other management techniques in any brucellosis elimination effort.



Dr. Tom Thorne Memorial

Unfortunately, the most significant event for the Greater Yellowstone Interagency Brucellosis Committee (GYIBC) this past year came in the form of great loss when a cornerstone of the GYIBC, Dr. Tom Thorne, was tragically lost in an auto accident December 29, 2004. To only further the magnitude of this loss, Tom's wife, Dr. Beth Williams, also was lost in this great tragedy.

Dr. Thorne was one of the founding members of the GYIBC when the group first formed in 1991 and the only original member that was still serving on the Executive Committee.

Dr. Thorne began his distinguished career as a wildlife veterinarian with the Wyoming Game and Fish Department in 1968. During that time he figuratively, and literally, 'wrote the book' on wildlife disease management in Wyoming. He co-authored the book, *Diseases of Wildlife in Wyoming*, one of the indispensable texts for wildlife vets in the West.

Tom was responsible for much of the early groundbreaking research with respect to managing brucellosis in elk and bison. Among other things, he initiated the early research and implementation of an elk vaccination program for brucellosis, which continues to this day. Thorne became world renowned for his extensive brucellosis work.

In addition to brucellosis, Thorne was a prominent expert on chronic wasting disease and other wildlife diseases. His work with Wyoming's bighorn sheep was widely acclaimed. In 1983, Thorne became a mainstay in research on the black-footed ferret when a population of the animals turned up in northwestern Wyoming. He supervised the desperate effort to breed the ferrets in captivity, a project that saved the species from extinction and has led to reintroduction of ferrets in at least four states.

Later in his career, Tom's leadership qualities brought him to serve as the Chief of the Services Division for the Wyoming Game and Fish Department. Then in May 2002, Gov. Jim Geringer named him acting director for the agency following John Baughman's resignation. Thorne served as acting director until March 2003. Shortly after his official retirement, Tom continued his work as a wildlife disease consultant for the G&F.

It wouldn't be appropriate to speak of Dr. Thorne without mention of his wife, and partner, Dr. Beth Williams. As a doctoral candidate at Colorado State University, Beth provided science with the first description of an important new wildlife malady- chronic wasting disease. She continued to be one of the leading experts on CWD throughout her career.

In 1980, Beth married Tom Thorne, and in 1982 she took a position as a professor in the Department of Veterinary Sciences at the University of Wyoming, beginning one of the most productive husband-and-wife collaborations in the history of American conservation. If there



was a wildlife health problem anywhere in the Rocky Mountain West, chances were good that Tom and Beth were trying to find a solution.

It has been said the Dr. Thorne was as at home wrestling a netted bighorn sheep to draw blood as he was explaining a complex wildlife disease issue to policy makers, the media or the general public. This is a true testament to the type of person, and leader, Dr. Thorne was.

To say that Drs. Thorne and Williams will be missed in the wildlife disease field is a gross understatement. Hopefully the GYIBC will continue its charge of eliminating brucellosis with the same dedication, integrity and humility that Tom and Beth exemplified.



Tom and Beth accepting Distinguished Service Awards from the Wildlife Disease Association.
Photo by Tonie Rocke



Memorandum of Understanding: Review, Revision, and Renewal

Bob Moon and Tom Linfield

The Greater Yellowstone Interagency Brucellosis Committee (GYIBC) was formally established in 1995 when the enabling Memorandum of Understanding (MOU) was signed by the Governors of Idaho, Montana, and Wyoming and Secretaries of the U.S. Departments of Interior and Agriculture. The MOU established the framework for the state and federal agencies with jurisdiction and management responsibilities over livestock, wildlife, and habitat resources to address the issues relevant to brucellosis in the Greater Yellowstone Area (GYA). The MOU was intended to be a dynamic agreement among the member agencies, with a term of five years, and subject to review and renewal. Recognizing the need to renew the MOU so that cooperative and coordinated interagency efforts to address the complex GYA brucellosis issue could continue, the GYIBC Executive Committee formed an ad hoc subcommittee in September 2003 to review and provide recommended revisions to the MOU.

The ad hoc subcommittee reviewed the MOU and developed a revised draft MOU, which they presented to the Executive Committee in January 2004. The most significant proposed revisions included: (1) Native American Tribal representation on the GYIBC, appointing the President of the Board of Directors of the InterTribal Bison Cooperative (ITBC) as the Tribal representative on the Executive Committee; and (2) stronger and more explicit commitment to elimination of brucellosis in the GYA, including the development of Cooperative Brucellosis Elimination Plans by the Technical Subcommittee. The Executive Committee reviewed the draft MOU and suggested additional revisions, which were subsequently agreed upon in September 2004, resulting in a final revised draft MOU.

The final revised draft MOU was provided to the respective agencies for further review, including verification of consistency with agency directives, jurisdictions, format, and legal content, resulting in additional proposed revisions. In May 2005, the U.S. Departments of Interior and Agriculture agreed upon a "federal" draft MOU for the States of Idaho, Montana, and Wyoming to consider. The "federal" draft MOU included additional provisions focusing on efforts to eliminate brucellosis from bison and elk in the GYA, including: (1) necessary agency development of adaptive management disease elimination plans for each affected bison or elk herd unit or population; (2) establishment of measures to evaluate incremental progress in disease elimination efforts; and (3) timelines for plan development and progress evaluation. The States are in the process of reviewing and analyzing the "federal" draft MOU, and as of July 20, 2005, agreement on a "state" draft MOU, if different than the "federal" draft MOU, had not been reached. Conferencing among the states is anticipated in hopes of arriving at an agreed upon "state" draft MOU in the near future. If the "state" draft MOU differs from the "federal" draft MOU, additional review by the federal agencies and negotiations between the state and federal agencies to resolve any differences will be necessary before a final revised MOU can be signed.



Spatial Dynamics of Elk in the Upper Madison

Keith Aune and Ken Hamlin

About 5,000 elk winter on private and public lands east of the upper Madison River near Ennis, Montana. Most of these wintering elk occupy private lands that support domestic livestock, primarily cattle. Since the mid 1960s, numbers of elk wintering along the Madison Face increased about 400%. Much of that increase is associated with changes in private land ownership and subsequent changes in tolerance for wintering elk and restricted hunter access to private lands. FWP manages these elk in accordance with Montana's Elk Management Plan adopted in 2004 and the Elk Brucellosis Management Plan adopted in 2002.

During the 2002-03 general and late elk hunting seasons, 142 samples of hunter-harvested elk were collected at various locations in the Madison Valley. *Brucella abortus* occurred in 4.9% (7) of those samples. Montana's Elk-Brucellosis Management Plan calls for assembling an Epidemiological Review Team when serologic surveys in one or more EMUs indicate a sero-prevalence of 5% or greater in any one year. The brucellosis sero-prevalence associated with Madison Valley elk underscores the need to collect additional information regarding the movement of these wintering elk to and from the valley. Also important is the dynamics of elk movement within the Madison Valley during late fall to early spring. Much of this movement occurs on private lands that support cattle.

A Memorandum of Understanding was established in 2004 between the Department of Livestock and Montana Fish, Wildlife and Parks to include a study to examine the spatial dynamics of elk in this area. One field coordination and project design meeting was conducted in July to coordinate FWP and MSU personnel who will cooperate on this project. A thorough discussion of methodologies and techniques was accomplished to assure that the project would provide maximum value to the agencies. A FWP manager's review of the project proposal was also completed to gain additional input into project design. The basic objectives of the study are to:

1. Define the various elk herd subunits in the upper Madison River.
2. Define movements toward, on and away from winter ranges, including locations of calving areas.
3. Identify variation, if any, in sero-prevalence relating to elk summer range, age, sex or wintering habitats.
4. Further understand elk movements on the winter range as they relate to private lands and publicly owned wildlife management areas
5. Further understand movements and distribution of elk on public lands grazing allotments.
6. Identify critical wintering areas on the east side of the upper Madison Valley in an effort to understand how elk distribution relates to domestic livestock operations in the valley.
7. Gather site-specific information about livestock grazing patterns from landowners in the Madison study area.



This project will provide explicit spatial information on elk at a coarse and fine scale to further refine the current GIS mapping used for USDA/APHIS brucellosis risk analysis. The data will contribute to mapping the elk winter/spring distribution to enhance agency planning and to identify areas critical for livestock management and wintering elk habitat. There is a growing need to maintain adequate open space in the Madison valley to effectively manage spatial and temporal separation between elk and domestic livestock should brucellosis become a greater issue. Information gained from this telemetry project will assist with land conservation and coordinated landscape management programs already in place in the Madison Valley. The common goal of the agencies is to maintain the traditional agricultural characteristics of this landscape while protecting valued wildlife resources at the same time.

Field operations were initiated during the report period and elk radio collaring operations were conducted in February 2005. Area management biologists contacted landowners in the area to inform them of field operations and to discuss the purpose of the project. A meeting was held with the Madison Valley Ranchlands group in September to inform them about the study and discuss capture operations with them. The MFWP research biologist and field support team developed final field protocols and conducted a very successful capture operation in February 2005. Thirty-seven elk including 32 females and 5 males were captured. Twenty adult female elk were fitted with Lotek GPS collars. Locations will be acquired every on-half hour from these collars and stored in computer memory chips within the collars. One of 3 yearlings (33%) was pregnant while 27 of 29 (93%) older females were pregnant. Five of 37 captured elk were sero-positive for brucellosis exposure. MFWP is monitoring the movements and seasonal use of various habitats as these animals disperse from winter ranges.



Cow elk released after being fitted with a Lotek GPS collar. *Photo by Keith Aune*



Wyoming Elk Brucellosis Study Plan

Hank Edwards

Serologic titers to brucellosis on the Alpine feedground have been steadily increasing over the last several years. The increase is difficult to explain with the current knowledge of this disease, especially considering our brucellosis management actions have not changed on this feedground for many years. We would expect to see an increase in the number of aborted fetuses on this feedground in response to the rise in the number and intensity of brucellosis titers, but that effect has not been observed. Therefore, a scientific investigation was initiated to aid our understanding of the unexpected increase in prevalence. The core of the project was to harvest 15 cows with various brucellosis titers, from very high to negative. Animals were necropsied and tissues collected for laboratory analysis and culture, with the goal isolation and identification of *B.abortus* to subspecies (biovar), and relate that to individual serological titers.



Linda Cope, WGFD Lab Assistant performs a standard plate test. Photo by Mark Gocke



Preliminary cultures have been completed on two animals. *B.abortus* biovar 4 was isolated from one fetus and lymph tissue from another animal. Due to the tremendous amount of tissues collected for the analysis, final analysis won't be completed until mid to late summer.

We would like to get as much information from these elk as possible and have adopted other studies that will aid in the development of accurate and rapid diagnostic tests. In addition, we hope to gain a better understanding of this disease, and assess the general health of elk on feedgrounds. In conjunction with the Wyoming State Veterinary Laboratory at the University of Wyoming, the following is a listing of the projects we plan to pursue:

- Develop PCR tests to identify *B.abortus* from tissue and compare those to culture results
- Develop DNA fingerprinting techniques on *B.abortus* isolates
- Determine the correlation between serological titers and culture results in preparation for the test and removal program as dictated by the Governors Brucellosis Coordination Team.
- Conduct herd health survey

A graduate student through the University of Wyoming Veterinary Sciences department has adopted this project. Completion time for this study is anticipated to require approximately two years.

Wyoming Game and Fish Dept Wildlife Disease Laboratory Brucellosis Serology Record												
WSVL Accession #		Date: 1/31/2005			Date Bled: 1/31/2005			Submitter: Hank Edwards				
		Species: Elk			Total Submitted: 14							
Clinical History/Project: 2005 Alpine Elk Brucellosis Study animals												
Tests Performed By: Hank Edwards				Test Authorization Expires: December 2005								
								ELISA				
ELK #	Animal I.D.	Age	Sex	CARD	SPT	RIV	CF	FPA	P/N	% INHIB	INTERP	Comments/fetal culture results
1	3433/34			P	I100	I100	82	165.6	P	94.558	Pos	Not pregnant
2	3751/52			N	P50	N25	N10	84.5	N	15.0735	Neg	Not pregnant
3	3846/45			P	I100	P100	163	234.5	P	98.7485	Pos	Not pregnant
4	4407/08			P	P200	P200	644	239.3	P	99.894	Pos	Pregnant-culture neg
5	3017/18			N	P50	I100	84	219.3	P	100.02	Pos	Pregnant-culture neg
6	3391/92			P	P200	P200	644	282.3	P	100.717	Pos	Pregnant-culture neg
7	3496/97			P	P200	P200	323	273.2	P	100.868	Pos	Pregnant-culture neg
8	2980/81			P	P200	P200	643	150.9	P	100.3635	Pos	Pregnant-culture POS
9	3728/29			P	I200	I200	642	257.2	P	99.8345	Pos	Pregnant-culture neg
10	4788/89			P	P200	P200	322	244.8	P	100	Pos	Pregnant-culture neg
11	4782/83			P	P200	P200	643	271.5	P	100	Pos	Pregnant-culture neg
12	3867/68			N	P25	N25	N10	62.8	N	9.4156	Neg	Not pregnant
13	3288/89			P	P100	P200	323	261.9	P	100	Pos	Pregnant-culture neg
14	6960/61			P	P50	P200	322	194.1	P	98.387	Pos	Pregnant-culture neg
FPA cutoff 1-9: 94.1												
FPA cutoff 10-14: 101												

FPA cutoff 1-9: 94.1

FPA cutoff 10-14: 101

Figure 1. WGFD serology record for winter 2005 Alpine elk brucellosis study



Bison Quarantine Feasibility Study

Jack Rhyan and Keith Aune

Often during the winter and spring bison migrate from YNP into Montana. Migrating bison use areas that include national forest system lands and private grazing lands primarily during these out-migrations. Federal and State agencies seek to minimize the risk of brucellosis transmission from bison to livestock on these grazing lands. To address this issue the Interagency Bison Management Plan (IBMP) and Environmental Impact Statement (EIS) was initiated in 1990 and finally approved in 2000. The IBMP did not include specific provisions to establish a bison quarantine facility. However, it did consider whether a quarantine facility would be an appropriate component of the plan and concluded that bison removed from the population could be used for approved research or sent to quarantine. It also indicated that further environmental review would be completed to determine the design, location and operation parameters for a bison quarantine facility.

In 2003, MFWP and USDA/APHIS jointly developed a quarantine feasibility research proposal and submitted it to extensive peer review by the scientific community. The project was designed to be an adaptive research effort with several phases associated with the step-wise development of appropriate temporary quarantine facilities and progressive hypothesis testing. The goal was to create brucellosis free bison to be used in conservation and restoration efforts in North America. Numerous public meetings and presentations were conducted to disclose the concepts and receive critical feedback from a diverse audience of interested publics and agencies. After scientific review and general acceptance of the project by key agencies efforts were initiated to develop an appropriate decision and environmental review process.

MFWP in cooperation with USDA/APHIS proposed to specifically address the issue of operation parameters by implementing Phase I of a bison quarantine feasibility study during the winter 2005. A Draft EA that met Montana Environmental Policy Act (MEPA) requirements was offered for public review on October, 12, 2004, to evaluate the potential impacts of three alternatives for the feasibility study-Phase I. After receiving comment and analyzing the impacts a decision notice to proceed with Phase I of the quarantine feasibility study was signed by the MFWP Regional Supervisor in January 2005. The impacts associated with a decision to conduct Phase I quarantine research were not considered significant and mitigations were proposed for minor impacts identified in the EA. USDA/APHIS published a notice of exclusion for this research under National Environmental Policy Act (NEPA) rules referencing the MEPA environmental analysis conducted by Montana. Phase I of the quarantine feasibility study was initiated in late January 2005 and the National Park Service issued a research permit to the principal investigators to allow their participation and support to this study.

The phase I quarantine facility at the former Brogan game farm near Corwin Springs requires some upgrade in the fencing to meet quarantine standards. The assembly pens were completed in February and prepared to receive bison calves captured this past winter.



Seventeen sero-negative bison calves captured through the winter-spring by the agencies while implementing the IBPM were introduced into the double fenced assembly pens. A final screening test will be conducted 45 days after the calves arrive to establish the final test group to begin the quarantine process. Additional pens will be upgraded throughout the spring-summer period and bison will be pastured in them after negative bison formally pass the final screening process.

To continue this feasibility study into Phase II and III it is necessary to complete an additional joint NEPA/MEPA compliance document and to conduct an appropriate public review and decision process. The State of Montana and USDA/APHIS will share the lead in this cooperative effort to comply with environmental regulations and implement the study. The evaluation process is expected to take 6-8 months to complete and will describe agency actions and decisions to be made. The EA will evaluate impacts to the human environment associated with several alternatives and any decision to proceed to Phase II and III. The issues scoping process was completed from March 15 through April 15, 2005. MFWP and USDA/APHIS received 68 comments during the issue scoping process and have compiled a list of issues to be considered in the Environmental Analysis. Work is progressing on a draft EA and a list of at least four alternatives has been developed. We anticipate a draft EA by fall-early winter and will receive public comment through mid winter. The anticipated date for a decision is December 16, 2005. A decision to advance this feasibility research will incorporate the findings from the Phase I study and construction associated with Phase II and III will be dependent upon the evaluation of results from Phase I.

For more information visit the FWP website at <http://fwp.state.mt.us/wildthings/quarantine.html>



Bison in quarantine facility.

Photo by Keith Aune



Monitoring Sero-negative Pregnant Bison in the Montana GYA

Keith Aune, Neil Anderson, and Mark Atkinson

Often during the winter and spring bison migrate from YNP into Montana. Migrating bison use areas that include national forest system lands and private grazing lands. Federal and State agencies seek to minimize the risk of brucellosis transmission from migrating bison to livestock using those grazing lands. An Interagency Bison Management Plan adopted in December 2000 stipulates that during Phase I of implementation sero-negative pregnant bison would be released from capture facilities and tolerated in portions of Montana outside YNP if they are carefully monitored. Sero-negative pregnant animals may pose a risk for transmitting this disease to cattle if the serologic tests were unable to properly determine an individual's infectious status. During a birth or abortion event infected pregnant animals unintentionally mis-identified using standard serologic testing could then shed the bacteria into environments they share with cattle.



Collared bison await release

Photo by Keith Aune



To monitor the disease risk these animals pose the management plan requires the agencies to fit each sero-negative pregnant bison with a radio collar and vaginal transmitter to be monitored until birth or abortion events. Field staff intensively monitor sero-negative pregnant bison until the May 15 haze-back date to determine location and changes in reproductive status. Bison are monitored to determine birth success or failure. At each birth-site soil and vegetation are sampled and cultured to determine if environmental contamination has occurred and cattle might come into contact with the site.

Since 2001, the MFWP Wildlife Laboratory has equipped 40 sero-negative pregnant bison, captured at DOL traps in the West Yellowstone area, with radio collars and vaginal transmitter implants in efforts to monitor birthing activities outside of Yellowstone National Park. Eighteen sero-negative pregnant female bison were equipped with monitoring equipment in 2001-02 and information has been reported previously. Trapping activities over the past two years have been limited and only one sero-negative pregnant bison was collared in 2003-04. This female bison ultimately moved back into YNP where she gave birth to an apparent healthy calf. Additional radio collars and vaginal implants were mounted on 21 bison during the winter of 2004-05. As of early May, 2005, 9 implants have been ejected and 8 of these bison presented normal birthing events and one bison is being investigated further to determine reproductive success. One bison died within Yellowstone National Park. The cause of this mortality is not known.



Wyoming BFH Program

Brandon Scurlock

Wyoming BFH Program: 2004

The Wyoming Game and Fish Department's integrated brucellosis management program (Brucellosis-Feedground-Habitat; BFH) is aimed at reducing the prevalence of brucellosis in elk. A total of 258 elk were trapped and tagged at four feedgrounds in 8 trap days during the 2004 trapping season. A total of 96 test-eligible female elk were bled for brucellosis evaluation. Adequate samples were collected at all state feedgrounds surveyed. Dell Creek feedground continues to serve as a "control" population as no vaccination has taken place since inception of the vaccination program at the Greys River feedground in 1985.

Strain 19 calfhood vaccination was again very successful this winter with a majority of the state feedgrounds reporting complete calfhood coverage. Many feedgrounds reported over 100% coverage, which suggests yearling females were boosted at several areas. A total of 3,325 calves were vaccinated at 19 state feedgrounds.

The strain 19 vaccination program on the National Elk Refuge was again conducted in 2004, being initiated for the first time during 2003 since 1989-1991. Vaccination efforts were extremely successful this winter. A total of 2,132 elk (1324 cows and 808 calves) were vaccinated during a 42-day period.

Implementation of habitat improvements projects was somewhat impeded last fiscal year due to Federal Land Management Agencies' lack of personnel to complete NEPA documents and moist conditions that prevented several scheduled prescribed burns. The first phase of the New Fork-Boulder treatment was conducted in Sublette County with 1,260 out of 2,677 total project acres burned in the spring of 2004. The second phase of this project is scheduled for the upcoming fall. Coordination meetings with federal agencies continued throughout the year to implement future projects. Monitoring of ongoing projects continued throughout the year including vegetation sampling and analysis.

Wyoming BFH Program: 2005

A total of 573 elk were trapped and tagged at six feedgrounds during the 2004-2005 winter, and 175 test-eligible female elk were bled for brucellosis evaluation. Adequate samples were collected at all state feedgrounds surveyed except South Park, where trapping operations ceased due to potential for increased elk/cattle commingling. A total of 15 trap days were recorded this winter between January 14 and March 11.



Strain 19 calfhood vaccination was again very successful this winter with a majority of the state feedgrounds reporting complete calfhood coverage. A total of 3,674 calves were vaccinated at 19 state feedgrounds. Since the inception of the strain 19 program in 1985, over 60,000 elk have been vaccinated at 21 of 22 state feedgrounds.

The strain 19 elk vaccination program was again conducted on the National Elk Refuge during the winter of 2005. Due to the short feeding duration this winter, only calves were vaccinated in effort to achieve maximum coverage of this cohort. A total of 507 calves (nearly 90% of number classified) were successfully vaccinated this winter during a 26 day period.



WGFD habitat biologist, Steve Kilpatrick, working elk through trap.

Photo by Mark Gocke



Summary of Wyoming Brucellosis Coordination Team

Frank Galey

The Wyoming State Brucellosis Coordination Team (BCT) was charged with identifying issues, describing best management practices, and developing recommendations related to brucellosis in wildlife and livestock in the State. The group was asked to provide recommendations that detail actions, responsibilities, and timetables where appropriate. Four topics were addressed:

- 1) Reclaiming Class-Free brucellosis status for cattle, surveillance, and transmission between species;
- 2) Developing an Action Plan of what to do in the event of a new case in cattle;
- 3) Addressing human health concerns; and,
- 4) Reducing, and eventually eliminating brucellosis in wildlife, specifically addressing winter elk feed grounds.

The team consisted of nineteen members and ten technical advisors. This report is a result of many educational presentations, a tour of winter elk feed grounds, eleven Brucellosis Coordination Team meetings, and multiple smaller subcommittee reports. The findings are presented in the form of a brief summary of discussions, itemized Best Management Practices (BMP's), and Specific Recommendations for each of the main topics.

The recommendations are prioritized within each topic, with two high-priority recommendations that cross multiple topics presented first. The team held comprehensive discussions about all four topics. It must be understood that brucellosis presents a variety of technical, biological, and political challenges. For the most part, consensus was achieved for all of the recommendations with the exception of two recommendations, both of which involved the potential for gradual phase out of winter elk feed grounds. In one case, the majority felt that closing of winter elk feed grounds was not recommended in the foreseeable future. However, in the other case, a majority of members of this team agreed that a gradual phase out or merger of winter elk feed grounds should be considered in the evolution of the proposed Brucellosis Management Action Plans (BMAP's).

Other challenges that the State will face in managing brucellosis in wildlife and cattle include gaps in technical knowledge, constraints on research due to designation of *Brucella abortus* as a 'select agent' by the United States Department of Agriculture and Centers for Disease Control, the need to obtain Federal agencies' and local citizens' cooperation to manage both the disease and wild bison and elk populations, and funding to achieve the goals of the brucellosis programs.

The Brucellosis Coordination Team has twenty-eight recommendations for the Governor and Wyoming State Legislature to consider. Funding is recommended to support many of these recommendations. Recommendations be viewed at <http://wyagric.state.wy.us/relatedinfo/BRucellosis/brucellosisCoordReport.pdf>



Idaho Elk Brucellosis Management Plan

Phil Mamer

The Idaho Brucellosis Management Plan has 3 primary objectives: 1) manage elk populations consistent with natural conditions and the Idaho Fish and Game Commission policy on winter feeding, 2) monitor elk and livestock for exposure to and/or infection with brucellosis, and 3) insure adequate areas of high quality winter/spring range necessary to support elk.

Elk management actions, in past years, have included trapping, testing for exposure to and infection with brucellosis, radio-collaring, translocation of some individuals to establish new winter use areas, and winter habitat improvements. At Rainey Creek, elk have been trapped and partitioned relative to brucellosis exposure: seronegative females and/or calves have been radio-collared and translocated to a nearby suitable, yet unoccupied, winter range; most males (1 year or older) have been released on site; and seropositive adult females and calves have been removed from the population. Efforts at Victor, Tepee Creek, and Conant Creek have been directed at trapping, testing, and radio-collaring individuals to gain more information on exposure to brucellosis and elk distribution, eliminating access to stack yards and feed areas, and stimulating elk to move to traditional winter range. Data from the radio-collared individuals suggests that some of the elk wintering at these sites in Idaho spend the summer and fall in Yellowstone National Park, Teton National Park, or Wyoming.

Disease surveillance of elk in Idaho indicates that the disease is present in elk herds east of Idaho Falls and that this disease distribution is stable. Additional areas of infection are present in the area east of Soda Springs based on the finding of seropositive elk in the area. The finding of seropositive elk in these areas is not surprising given the close proximity to elk feed grounds in Wyoming and the relatively high seroprevalence for brucellosis in elk on these feed grounds.

The Governors Brucellosis Task Force report addresses the wildlife brucellosis problem. The issues, goals, and objectives produced are to plan and implement management practices to maintain separation between elk and cattle, decrease and eventually eliminate elk dependence on supplemental winter feed, and conduct brucellosis surveillance in elk. The effort has three primary objectives:

1. Manage elk populations within the carrying capacity of available winter habitat and provide for a harvestable surplus and to reduce brucellosis prevalence to background levels.
2. Monitor elk and livestock for exposure to and/or infection with brucellosis.
3. Insure adequate areas of high quality winter and spring range necessary to support a persistent and huntable population of elk, and maintain separation between elk and cattle during the high risk period.

Elk Population Management

The Idaho Fish and Game Commission established elk population objectives in 1998 based on the potential of a given area to naturally support elk and provide for a huntable surplus. These



objectives were set by geographic areas known as Elk Management Zones made up of one or more Game Management Units. The brucellosis management activities have been concentrated in the Palisades Zone (Units 64 & 67) and Teton Zone (Units 62 & 65) and the Diamond Creek Zone (Units 66A & 76). Winter populations are being monitored in all three zones. Permits have been increased and dates for controlled hunts have been rescheduled to increase hunter access to problem elk and reduce elk/cattle interaction.

Surveillance for Brucellosis in Elk

The primary objectives of the disease surveillance efforts are to monitor elk in Idaho to document the prevalence and distribution of brucellosis. These data are used to provide input into elk management actions to reduce the risk of brucellosis in Idaho wildlife to an acceptable level and to manage livestock and elk to prevent transmission of the disease. Seropositive elk are removed from populations with high seroprevalence and a long history of feeding. In the 2003-04 winter, 112 elk [of the 500+elk on the feed ground] entered the trap at Rainey Creek feed ground and were serologically tested for brucellosis. Four elk tested positive and two cows were removed and cultured for brucella. In the 2004-05 winter, 34 elk [of the 200+elk on the feed ground] entered the trap at Rainey Creek feed ground and were serologically tested for brucellosis. Two cow elk tested positive and were removed and cultured for brucella. *Brucella abortus* Biovar 4 was isolated.

Hunter brucellosis sample kits are sent to hunters in controlled hunt units to evaluate brucellosis risk. No hunter kits were sent out for the fall 2003 hunts. In fall 2004, 2015 kits were sent to hunters in the Diamond Creek and Bear River Zones. 285 usable samples were returned and 2 tested weak suspects. Although, eradication of the disease is the long-term goal, political, biological, and technological factors make control of the disease a much more practical and attainable mid-range goal.

High Quality Winter and Spring Range and Elk/Cattle Separation

Efforts to improve and/or increase suitable winter/spring range have targeted specific private lands enrolled in the CRP program and potential areas on public lands. Private landowners were contacted and asked if they would be willing to improve forage conditions on their property for wintering elk and/or posting their property to exclude snow machine use thereby providing secure areas for elk. IDFG, ISDA and other land management agencies are in the process of developing an interagency, landowner, sportsmen committee to identify potential winter/spring elk range and to identify opportunities to manipulate vegetation to produce suitable winter/spring areas for elk.

IDFG and ISDA have worked cooperatively to provide fencing for numerous stack yards in eastern Idaho. Stack yards, brucella positive elk locations, and elk/cattle interaction sites have been or are in the process of being mapped and brucellosis risk assessments done.

Because of these actions, the prevalence of brucellosis in eastern Idaho elk should be reduced to acceptable levels and the risk to livestock contracting brucellosis from elk should be minimized.



Enhanced Surveillance for Brucellosis in Free-Ranging Wildlife in Montana

Keith Aune, Neil Anderson, and Mark Atkinson

Brucellosis is a contagious bacterial disease that affects free-ranging elk and bison in the Greater Yellowstone Area. The disease is a concern to domestic livestock producers in Montana because it could be transmitted from wildlife to domestic animals. The Montana Fish, Wildlife and Parks (MFWP), Wildlife Research Laboratory (WL) conducts annual serologic surveys for exposure to *Brucella abortus* in elk populations within the Greater Yellowstone Area (GYA) as outlined in the Montana Elk-Brucellosis Management Plan. The goal of the plan is to ascertain the risk posed by infected elk to Montana cattle herds. Surveys are generally completed using serum from hunter-killed elk within the GYA. The Elk-Brucellosis Management Plan, available upon request at MFWP, was completed in August of 2002 and highlights three elk management units (EMU's) of concern, the Madison, Gallatin and Emigrant. EMU's were formally surveyed once every three years on a rotational basis.

Prior to the 2004 hunting season, MFWP and Department of Livestock (DOL) evaluated historic elk serologic data and modified testing procedures to reduce laboratory costs and increase testing efficiency. It was agreed that initial serologic screening tests for *B. abortus* would consist of the card, rivanol, and fluorescence polarization tests. The remaining test in the standard panel would be performed on all positive samples as determined from these three screening tests.

Prior to 2004 elk brucellosis surveys were largely conducted by mailing blood collection kits to hunters holding permits within the EMU to be surveyed. Permits were issued to hunters through an application process and subsequent lottery drawing administered by MFWP. Names and addresses of permit holders were then available for mailing of blood collection kits. Recent changes in elk hunting seasons (opened to anyone possessing a general elk license) and the reduction in permit hunts greatly affected the number of hunters available to receive blood collection kits through the mail. Additional changes to reduce the harvest of elk during the Gardiner Late Hunt in the Emigrant EMU reduced the number of samples collected during the 2004-05 hunting season.

As a result of the changes in hunting seasons, a decision was made by the WL to survey all three EMU's during the 2004-2005 hunting season. Blood collection kits were mailed to nearly 700 hunters receiving permits within the Gallatin and Madison EMU's. Kits were also handed out opportunistically to hunters at three game check stations located at the mouth of the Gallatin canyon near Bozeman, north of Gardiner and near the town of Ennis. MFWP area biologists and wardens also distributed kits to hunters in the field prior and during the hunting



season. Despite these aggressive efforts to collect blood the number of samples collected was unremarkable limiting the certainty of results due to small sample sizes. The results from the submissions for fall, 2004 and winter, 2005 are presented in Table 1 alongside the estimated elk population size.

An increased sero-prevalence in the Madison EMU has prompted an interagency review by a select panel to examine these data thoroughly, determine the significance of trends and consider any remedial actions that could be implemented to reduce sero-prevalence. A major consideration is the elk population substructure and evidence of a dynamic shift in this distribution. Further examination of the spatial aspects of the data indicate that the primary area of concern is the upper portion of the Madison EMU south of Ennis and nearest West Yellowstone Montana. Northern portions of this EMU reflect very low sero-prevalence.

Table 1. Brucellosis test results from the submission of elk serum collected during the 2004-05 hunting season in the Montana GYA. Samples were collected up through mid February.

EMU	Approximate Population	Samples Submitted	Positive	Percent Pos.
Emigrant	9000	243	10	4.1%
Gallatin	1000	21	0	0.0%
Madison	4000	174	12	6.9%

Throughout the spring, summer and fall MFWP, Wildlife Lab, in cooperation with the Interagency Grizzly Bear Study Team (IGBST) and other bear researchers or bear management personnel, collects blood samples from grizzly and black bears captured within the GYA. During 2004, 32 grizzly bear and 31 black bear serum samples were submitted for brucellosis testing. Results from the testing of these samples are presented in Table 2. The consequences of these findings are not fully understood but these results are consistent with prior surveys of bears within the Yellowstone ecosystem.

Table 2. Serologic test results for brucellosis completed on grizzly and black bears from the GYA during 2004.

Species	Number of Samples	Sero-positive	Suspect	Percent Sero-Positive
Grizzly Bear	32	10	5	31.3%
Black Bear	31	8	4	25.8%



MANAGEMENT

Wyoming Infected Cattle Herds

Dwayne Oldham

Investigation is a cooperative effort involving producers, Wyoming Livestock Board, APHIS, USFS, and BLM. APHIS personnel and State Veterinarians from Wyoming, Idaho, Colorado, Montana, South Dakota and Nebraska are involved. Brucellosis is a reportable disease and each new case must be reported to Federal and State officials.

- In Sublette County, eleven contact and adjacent herds were identified and placed under movement restrictions.
 - Subsequent testing of adjacent and contact herds completed second week of January, 2004.
 - Negative test results confirmed on approximately 4,000 head. Four suspects positive on screening tests but negative on Rivanol.
 - All adjacent and contact herds will be re-tested post-calving, and are under quarantine until test negative.
- **January 21, 2004** – Other state veterinarians and Wyoming producers notified that a second infected herd was found in Wyoming and that APHIS would downgrade Brucellosis Free status to Class A status. This downgrade would become effective when published in Federal Register.
- **January 23, 2004** – Governor Freudenthal appeals to APHIS to review Wyoming's loss of status.
- **February 6** – Three (3) Brucellosis positive elk necropsied and tissues cultured for typing.
 - WGFD/WLSB/WSVL personnel harvested three (3) of the seropositive cows and tissues were taken for culture. To date, *Brucella abortus* is growing on at least one sample. The fourth seropositive animal has not been found since blood tested and radio collared.
- **February 10** - Governor Freudenthal signed Chapter 2 Emergency Rules into effect.
- **February 20** - Notice of Wyoming's loss of Brucellosis Class Free Status and downgrade to Class A Status published in the Federal Register effective date of February 13, 2004. Rule was effective dated February 13, 2004. Class A Status imposed on cattle industry requires Brucellosis testing on all test eligible cattle moving interstate within 30 days prior to movement. Intra-State test requirements also mandated by Class A Status designation.
- **March 1, 2004** – Index herd Quarantine is released. The herd was depopulated in January and heifers have been spaced.
- **July 29, 2004** – Wyoming State Veterinarian and the USDA/APHIS/AVIC for Wyoming were notified that the culture samples grew *Brucella abortus* Biovar 1 in a Campbell County case.



- **October 10, 2004** — Special depredation hunt for elk in Northeast Wyoming gets under way in order to test elk for Brucellosis.
- **December 6, 2004** — It is determined that tissues from the Campbell County index herd were most likely cross contaminated with *Brucella* originating from a bison herd in SD that was archived and used as a positive control in lab work at the Animal Disease Research and Diagnostic Lab in Brookings, SD.
- **June 21, 2004** — In Teton County an index herd is quarantined for Brucellosis testing as a result of contact to high titer reactor cow.
- **October 13, 2004** — Second Teton County herd has its quarantine updated to reflect discovery of Brucellosis Reactors during herd testing by USDA/APHIS following return from summer grazing. This is the Second Index herd for Teton County.
- **January 12, 2004** — Final recommendations by the Wyoming Brucellosis Coordination Team for combating brucellosis in Wyoming are made available online. Links are posted on the Governor's web page at: http://wyoming.gov/governor/governor_home.asp and on the task force's web site at: <http://wyagric.state.wy.us/relatedinfo/govbrucecoordinati.htm>



Grazing cattle in Sublette County.

Photo by Mark Gocke



Interagency Bison Management Plan for the State of Montana and Yellowstone National Park

Rick Wallen, Tom Linfield, and Pat Flowers

The Interagency Bison Management Plan (IBMP) established a federal/state partnership to jointly manage the Yellowstone bison population. The role each agency plays in implementing the IBMP is defined in the respective state and federal records of decision (ROD) and the subsequently established field operation procedures. The IBMP incorporates adaptive management principles, to continually improve management policies and practices by learning from the outcomes of operational programs. While the focus of the management strategy is to prevent bison from commingling with cattle, implementation of a comprehensive vaccination program and gaining a better understanding of the ecology of both bison and the bacteria *Brucella abortus* provide the mechanisms for effectively managing the risks of brucellosis transmission from bison to livestock.

Under the IBMP, agency personnel monitor the two main bison exit corridors designated as the northern and western Special Management Areas (SMA's). When necessary, bison within SMA's are hazed to appropriate management zones. When hazing is no longer effective, bison may be captured, tested for exposure to brucellosis, and sent to slaughter if they test positive. Bison that cannot be safely or effectively hazed or captured may be shot. Step 1 of the IBMP provides for opportunities of up to 100 seronegative bison to remain outside the park in specific management zones when cattle are not present.

Managing the Risk of Disease Transmission

Disease transmission risk is managed by preventing bison and cattle from commingling, by removing bison from lands that cattle will occupy, and by implementing both a cattle and a bison vaccination program. To prevent bison from commingling with cattle, bison are hazed to appropriately designated winter range when they are found in close proximity to cattle and, after April 1, if bison are observed in locations that cattle will occupy during the summer. A voluntary cattle vaccination program is established for livestock operators in Montana, and a mandatory vaccination program, funded by USDA, is established for producers grazing cattle in, or adjacent to the identified SMA's. Seronegative bison calves and yearlings captured during management operations are vaccinated and released.

Winter 2003/2004

118 hazing operations were conducted during the year ending in June of 2004: 36 at the northern boundary (Table 1, Fig 1) and 82 at the western boundary (Table 1, Fig 2). Sixty-three percent of hazing operations along the northern boundary involved mixed age and gender groups while at the western boundary mixed group hazing operations accounted for 26 percent of all hazing operations conducted.

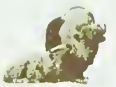
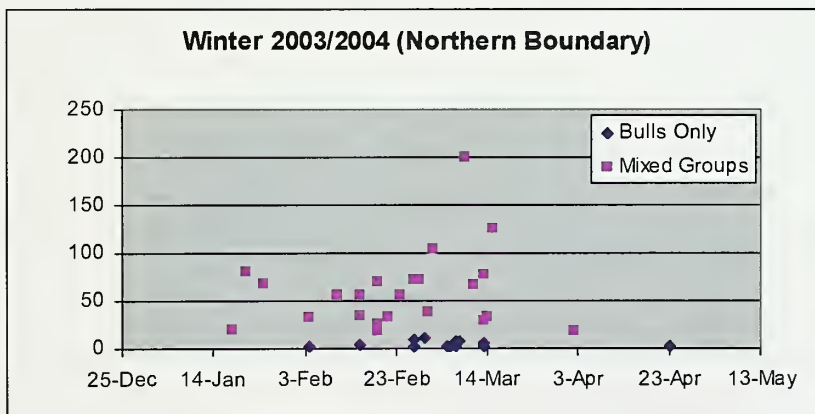


Table 1. Summary of Northern and Western Boundary hazing operations: 2003/2004 and 2004/2005 management season.

Special Management Area	Total Number of hazing events	Events Involving Adult Males Only			Events Involving Mixed Groups		
		Total # of events	Range of animals/ events	Average # of animals/ events	Total # of events	Range of animals/ events	Average # of animals/ events
October 2003 to June 2004							
North	36	13	1 - 10	4	23	17 - 200	60
West	82	60	1 - 47	6	22	6 - 157	30
October 2004 to June 2005							
North	15	4	1 - 8	3	11	1 - 43	16
West	156	100	1 - 12	3	56	2 - 345	40
Eagle Creek / Bear Creek winter range area	24	17	1 - 14	6	7	10 - 50	26

Figure 1. Temporal distribution of hazing operations at the northern boundary area.

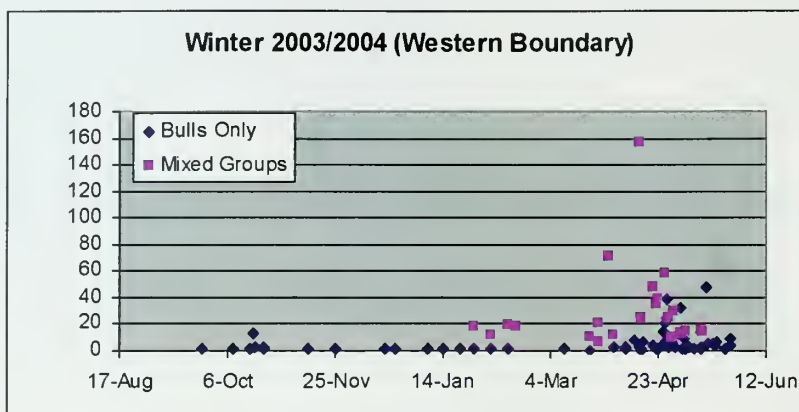


Capture operations occurred at both SMA's during the period October 2003 to May 2004. 425 bison were captured and tested for brucellosis (407 northern SMA, 18 western SMA), of which 207 were released after testing negative. 281 bison were killed as a result of management operations (218 test positive and an additional 59 untested bison were sent to slaughter, while 4 were shot in the field).

Eight days of sampling bison at the northern SMA capture facility and a compilation of samples from random surveillance of brucellosis seroprevalence throughout the park resulted in a 52% brucellosis sero-positive rate for bison tested during the period November 2003 to March 2004 by the National Park Service.



Figure 2. Temporal distribution of hazing operations at the western boundary area.



Winter 2004/2005

195 hazing operations were conducted during the year ending in June of 2005: 39 at the northern boundary (Table 1, Fig 3) and 156 at the western boundary (Table 1, Fig 4). Forty-six percent of hazing operations along the northern boundary involved the movement of mixed age and gender groups while at the western boundary mixed group hazing operations accounted for 36 percent of all hazing operations conducted.

Twelve capture operations were conducted at the western boundary, in which 184 bison were captured (66 bulls, 87 cows, 12 yearlings, and 19 calves). Of those captured, 69 were test negative and subsequently released (24 bulls, 33 cows, and 12 yearlings), 97 were transported to slaughter facilities (41 bulls, 54 cows, and 2 calves), 17 calves were transported to the Bison Quarantine Feasibility Study site, and 1 aged bull died in the capture facility. Of the 33 seronegative cows released, 21 were pregnant and were radio-collared and implanted with vaginal radio telemetry devices in order to conduct additional monitoring. All of the 12 seronegative yearlings captured and subsequently released were vaccinated with *Brucella abortus* strain RB51 vaccine (9 vaccinated in 2005, 3 vaccinated in 2004 as calves).

Bison Vaccination Programs

Vaccination of calf and yearling bison is limited to those individuals that are handled at the two boundary area capture facilities. During the spring of 2004, 113 calves and yearling bison were vaccinated at the northern SMA capture facility prior to being released in April. During the spring of 2005, nine yearling bison were vaccinated at the western SMA capture facility. None were captured or vaccinated at the north SMA during the winter and spring ending in June 2005.



Figure 3. Temporal distribution of hazing operations at the northern boundary area and the Eagle Creek winter range (December 2004 to June 2005).

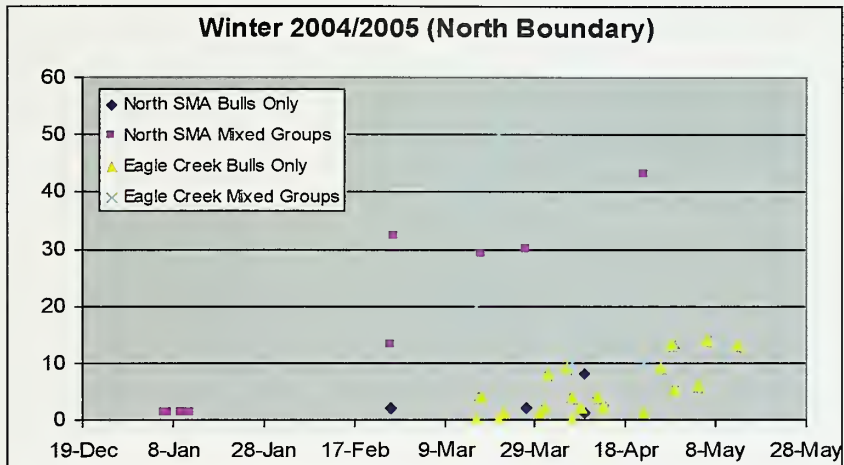
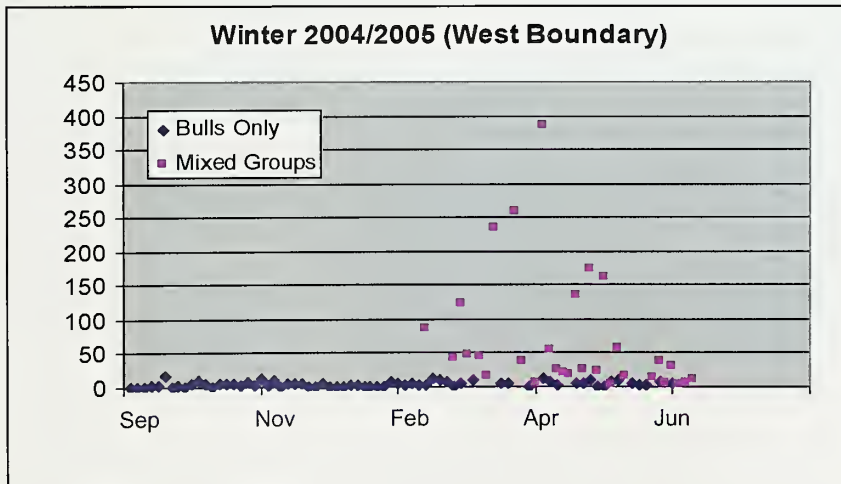


Figure 4. Temporal distribution of hazing operations at the western boundary area (December 2004 to June 2005).





Vaccination and Surveillance of Livestock

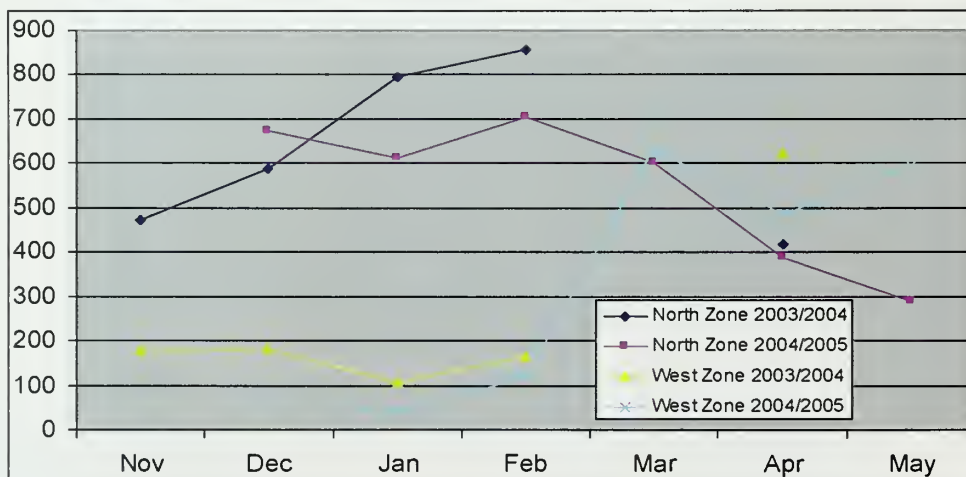
In the fall of 2004, entire herd brucellosis testing was conducted on a cattle herd that grazed in western SMA adjacent to YNP, in which all cattle were seronegative. In the spring of 2005, entire herd testing and entire herd adult vaccination were conducted on a cattle herd in the northern SMA adjacent to YNP.

Monitoring Abundance and Distribution

Bison abundance and distribution within and adjacent to the SMA's were monitored through monthly surveys conducted from November to May depending on suitable weather conditions. The area of coverage is based on the monitoring needs as described in the interagency field operating procedures (December 2003).

During the winter season Nov 2003 to May 2004 bison abundance peaked in the northern SMA in February (856 bison) as compared to a peak of activity in the western SMA in May (623 bison). A summer count (August 2004) of bison population abundance resulted in an estimate of 4240 individuals including 640 calves of the year that survived to mid-summer. During the winter season Nov 2004 to May 2005 bison abundance peaked in the northern SMA in Feb (703) and in the western SMA in March (631) (Figure 5).

Figure 5. Bison abundance in Northern and Western Special Management Areas: Winters of 2003/2004 & 2004/2005.





Habitat Management Actions On Low Elevation Winter Range

The previous permittee vacated the Horse Butte grazing allotment located in the western SMA on the Gallatin National Forest. The permittee moved their summer grazing to the Targhee National Forest in southeast Idaho. The allotment has not been grazed since 2001, however this permittee continues to graze cattle on their adjacent private property during the summer months. A final decision regarding the status and management direction for this allotment will be made during the next revision of the Forest Plan. Vacating this summer grazing allotment may further reduce the risk of brucellosis transmission from bison to cattle, as no livestock will be expected to occupy this portion of the landscape where some bison are tolerated in the winter.

Development of a Hunting Program

The Montana Fish, Wildlife and Parks Commission agreed in December 2004 to a bison hunt that would begin in January of 2005. New Commissioners were appointed in January of 2005 and they voted to delay the proposed hunt for a year to allow for a full season hunt in as broad an area as possible. The Commission is scheduled to vote on bison permit quotas for the '05/'06 season at their August 4th meeting.

Conclusion

The interagency partnership has initiated a review of the operations and research efforts conducted during the first five years of IBMP implementation. This review is intended to provide an assessment of how successful the IBMP has been in achieving the goals set forth in the Final Environmental Impact Statement and Records of Decision issued by the state and federal agencies. The anticipated release of the status review is autumn 2005. The wild bison population of the northern Greater Yellowstone Area remains free ranging, reproductively vigorous, and genetically important for conservation of the species in North America. In addition, successful implementation of the IBMP allowed the livestock operations in and adjacent to special management areas along the northern and western boundaries of Yellowstone National Park to remain brucellosis-free, thereby maintaining Montana's brucellosis Class Free status.



Tri-state Livestock Surveillance and Risk Analysis

Ryan Clarke and Arnold Gertonson

The foundation of cattle surveillance in the three state GYA is the Market Cattle Identification (MCI) system. The MCI is a national surveillance system administered by APHIS in partnership with the individual states. Under the MCI system all cattle and domestic bison over two years of age have a blood sample collected at slaughter. These samples are then subjected to the standard battery of serological tests for *B. abortus* antibody at an approved diagnostic laboratory. Test reactors or suspects are brought to the attention of the appropriate animal health officials in the animal's state of origin.

Each state in the GYA has its own cattle surveillance program to supplement the MCI system. This program varies from state to state depending upon the types of livestock operations in that state's portion of the GYA and the state's Brucellosis status (Class Free, Class A, etc.). Montana annually tests the majority of the cattle that graze in the immediate vicinity of Yellowstone National Park, those areas designated by the Interagency Bison Management Plan as Zone 2 and the Eagle Creek SMA. The intention is to eventually test all the cattle in those portions of the GYA on a regular basis.

The eastern portion of Idaho bordering Yellowstone National Park has a significant dairy industry. This enables Idaho to incorporate the BRT milk test for *B. abortus* antibody into their program as a highly efficient means of testing a large number of cows on a regular basis. The state presently is testing beef herds in the area on a voluntary basis.

Wyoming's surveillance program is based on its designation as a Class A state. The state incorporates such measures as change-of-ownership testing, testing of test-eligible cattle going interstate, increased emphasis on testing of aborted fetuses and the testing of certain cattle herds on a voluntary basis as tools in building a case for regaining Class Free status.

Beginning in late 2004 the three states and APHIS began discussions about using a risk assessment matrix as a means of identifying untested livestock operations in the GYA that may have significant risk for brucellosis transmission from wildlife. The risk matrix incorporates exposure factors that were involved in recent known transmissions of brucellosis from wildlife to cattle. Producers would have their level of risk assessed through the voluntary application of a standard questionnaire. Those operations having a high proportion of risk factors in common with cases of known transmission would be candidates for increased surveillance.



Draft Bison and Elk Management Plan and Environmental Impact Statement for the National Elk Refuge and Grand Teton National Park

Laurie Shannon

The U.S. Fish and Wildlife Service and National Park Service, as the lead agencies, in cooperation with Wyoming Game and Fish Department, U.S. Forest Service, Animal and Plant Health Inspection Service, and Bureau of Land Management, are preparing a bison and elk management plan (plan) and environmental impact statement (EIS) for the National Elk Refuge and Grand Teton National Park. The draft plan/EIS is anticipated to be published for public review in July 2005 with a 60-day comment period to follow. Following the release of the document, meetings will be held at several locations that will enable the public to learn more about the contents of the plan and to express their comments to U.S. Fish and Wildlife Service and National Park Service.

The agencies developed four goals for the plan to address the many legal and policy directives of the U.S. Fish and Wildlife Service and National Park Service as well as the significant issues identified during the extensive public input that has been received during the process. These goals address: 1) habitat conservation for elk and bison as well as other native species; 2) sustaining a healthy population of bison and elk on the National Elk Refuge and Grand Teton National Park while minimizing the risks of irreversible or long-term adverse impacts to the herd or other species; 3) contributing to Wyoming Game and Fish Department's herd objectives for the Jackson bison and elk herd to the extent it is compatible with the other goals; and 4) addressing the risk of brucellosis and other non-endemic infectious diseases to protect the economic interests of the livestock industry within the State of Wyoming and the long-term viability of the Jackson bison and elk herds.

While supplemental winter feeding of elk and bison on the National Elk Refuge has been the focal point of many of the significant issues raised in the planning process, the core problem is that there is an insufficient amount of winter range for the numbers of elk that have been sustained in the Jackson Hole area and the growing bison population.

Six alternatives or actions for management are identified in the plan including a proposed action. The alternatives examine different approaches to managing the habitat and the bison and elk herds in order to meet the four management goals of the project. After the public comment period closes, the agencies will respond to the substantive comments that are identified and make additional modifications to the plan as deemed necessary. The final plan/EIS is expected to be completed by the end of 2006.



Montana's Bison Vaccination Environmental Assessment

Tom Linfield

The Montana Department of Livestock (DOL) prepared an Environmental Assessment (EA) to review the impacts to the human environment associated with a proposal to vaccinate bison calves and yearlings in the Western Boundary Area of Yellowstone National Park (YNP), consistent with the adaptive management steps as described in the Interagency Bison Management Plan (IBMP).

The EA evaluated two action alternatives:

1. No action. Under this alternative, bison management in the Western Boundary Area would continue under the provisions of the IBMP. The DOL would defer the decision to incorporate bison vaccination into the plan for the Western Boundary Area, pending the results of additional research regarding vaccines suitable for use in bison.

2. Vaccinate seronegative bison calves and yearlings in the Western Boundary Area (Proposed Action). Under this alternative, DOL would vaccinate bison calves and yearlings with *Brucella abortus* strain RB51 (RB51) vaccine, consistent with the adaptive management steps for the Western Boundary Area, as described in the IBMP. Vaccination eligible bison include bison that meet all of the following criteria: 1) calves (4 to 12 months of age) and yearlings (12 to 24 months of age); 2) captured as a result of other management actions to manage bison numbers and distribution in the Western Boundary Area; 3) tested to determine that the bison are seronegative for brucellosis; and, 4) otherwise eligible for live release because bison numbers do not exceed the population objective for the respective management area or the population does not exceed the population target of 3,000 for the whole bison herd. When the population exceeds the defined objective for the Western Boundary Area (100 seronegative bison) or for the target for the whole bison herd, the DOL may exercise discretion in determining whether to vaccinate and release otherwise eligible bison.

The EA also identified four additional alternatives that, for reasons explained in the EA, were not analyzed further. These included: 1) Vaccination of bison calves and yearlings according to a research protocol; 2) Vaccinate only female calves and yearlings; 3) Vaccinate with Strain 19; and, 4) Initiate remote vaccination.

The EA included analysis regarding the safety of available vaccines for use in bison; the safety of available vaccines to non-target species; the efficacy of available vaccines for reducing brucellosis infections in bison; identification of the most appropriate vaccine for use in bison; determination of the most appropriate dosage; definition of vaccine eligible bison; determination of the most appropriate method for vaccinating bison; and, determination of the



most appropriate way to coordinate bison vaccination with other bison management and research activities.

The EA was offered for public review on December 3, 2004. In addition, two public hearings were held, the first in Bozeman on December 14 and the second in Helena on December 15. Comments on the EA were accepted until January 5, 2005. The DOL received 66 comments in response to the EA and 13 people attended the two public hearings. In addition to the oral testimony, 2 written comments were submitted during the hearings. In addition to individual comments, responses were received on behalf of ten organizations.

Based on the analysis in the EA and comments received, as well as the applicable laws, regulations and policies, the DOL released a Decision Notice on February 4, 2005, authorizing the vaccination of seronegative bison calves and yearlings captured in the Western Boundary Area, as described under the proposed action alternative. Vaccination, by injection with *Brucella abortus* strain RB51 vaccine, will occur opportunistically, as an incidental activity to normal bison management activities. Capture operations will continue at the level required to maintain bison numbers and distribution in the Western Boundary Area, as defined by the IBMP. The DOL does not propose additional capture operations specifically for the purpose of increasing the number of bison available for vaccination.



Biologists work chutes for bison testing and vaccination.

Photo by Rick Wallen



Park-wide Remote Delivery Vaccination Program for Bison in Yellowstone National Park

Rick Wallen

The purpose of this program is to implement a strategy to remotely deliver brucellosis vaccine to free roaming bison throughout Yellowstone National Park to lower the percentage of bison susceptible to brucellosis infection. Remote delivery is distinguished from hand delivery that occurs in capture pens at or near the park boundary when bison leave the park. Remote delivery would not involve capture and handling of individual animals.

A December 2000 Record of Decision resulting from the interagency bison management plan for the state of Montana and Yellowstone National Park noted that the remote vaccination of eligible bison with an effective and safe vaccine would contribute to a population level increase in immunity against *Brucella abortus*.

An environmental planning process is currently underway to determine whether or not to proceed with implementation of remote vaccination. A Notice of Intent to Prepare an Environmental Impact Statement was published in the Federal Register on 3 August 2004.

The park conducted four public meetings in September 2004 to gather public comment and assess public interest in this issue. Thirty seven people attended those public meetings. The park received 137 comment documents that included more than 800 specific comments. Fifty-seven percent of the comments were substantive, leading to the identification of 12 key issues to address in the EIS. Public opinion was broadly diverse as expected and numerous comments were submitted requesting the National Park Service to select a no action alternative. No new issues were discovered through public scoping.

Consultation with the 26 associated American Indian tribes was initiated in December of 2004. Eighty-four other tribes interested in bison management issues at Yellowstone were notified of the planning process and queried about their interest in the vaccination program.

The National Park Service is currently studying the input provided by public scoping and the consultation process. The service will prepare a draft Environmental Impact Statement with the results of the study with a goal for having the DEIS available for public review by the end of 2005.



Triennial Public meetings, website, newsletter, and symposiums

Mark Gocke

There were again many opportunities for public participation in the GYIBC during the past year and a half. With the infection of a Sublette County, WY, cattle herd that wintered adjacent to an elk feed ground, the GYIBC organized a public forum on the topic of elk feed grounds in Wyoming. The purpose of the forum was to engage the public in a question and answer discussion with wildlife managers and disease specialists from the Greater Yellowstone Area regarding elk feedgrounds and brucellosis management. The event was held on May 19, 2004, following the regular GYIBC meeting and prior to the meeting of the Wyoming Brucellosis Coordination Team, so that members of both groups could attend. There was an estimated attendance of over 200 people including ranchers, conservationists, government officials and other wildlife and livestock enthusiasts.

The GYIBC website continues to be improved as a vehicle for disseminating brucellosis-related information to the public. A one-page flyer has been developed as a quick and easy way to inform politicians and others about the mission, goals and accomplishments of the GYIBC and promote the website. The revised website can be viewed at: <http://gyibc.com/>.

The GYIBC held four regular meetings during the time period of this annual report, in Bozeman, MT, Jackson, WY and Idaho Falls, ID. All were open for public attendance and comment. The first annual report of the GYIBC was completed and distributed. The newsletter continues to be written and made available electronically on the website. Additionally, the I&E Subcommittee compiled and circulated copies of all brucellosis-related newspaper articles at each regular meeting.



An Initiative to Enhance Brucellosis Vaccines, Vaccine Delivery and Surveillance Diagnostics in Bison and Elk in the Greater Yellowstone Area

Rick Willer and Tom Linfield

During the 2004 Annual Meeting of the United States Animal Health Association (USAHA), incoming president Dr. Rick Willer appointed a Special Committee to address shortcomings in the current brucellosis eradication effort in the Greater Yellowstone Area (GYA). The Special Committee was first charged with planning and conducting a workshop with experts from state, federal, academic and private sectors that will generate a report to the USAHA president at the 2005 Annual Meeting.

Workshop Goals: Recognizing the challenges of eliminating brucellosis from free-ranging bison and elk, the Special Committee established three primary goals for the more than 50 workshop participants: 1. address research needs for new and improved brucellosis vaccines that are safe and effective for use in free-ranging bison and elk; 2. consider alternatives to vaccine delivery systems for wild species; and 3. improve live-animal diagnostic capabilities for identifying infected animals.

Background: National brucellosis eradication efforts in domestic livestock have proven very successful. The disease has nearly been eliminated from those animals while the disease remains in free-ranging deer and elk. The success of the eradication efforts in livestock are due, in large part, to the availability of effective vaccines that were designed for use in those species. Unfortunately, those same vaccines, when applied to free-ranging bison and elk, have, at best, reduced effectiveness. In addition to recognizing the need for the development of an effective vaccine for use in these free-ranging species, any new vaccines would need to be tested for safety and efficacy, and safe and effective delivery systems for those vaccines would have to be found. Finally, because there are no efficient or effective surveillance diagnostics on live animals to separate those that have been only exposed to the causative agent versus those that are actually infected, new diagnostic tests must be designed to determine infection status. Thus, there are very important knowledge gaps in the technical capacity to conduct highly effective elk and bison brucellosis vaccination and surveillance activities. It is important to note, however, that vaccination is only one tool that can be used in a brucellosis elimination strategy, and is unlikely to be successful if relied on alone. To be effective in an overall brucellosis elimination effort, vaccination will need to be utilized in conjunction with other management techniques.

Additional Details: The Workshop will be held, August 16-18, 2005, at the University of Wyo, Laramie. Sessions facilitated by the University's Ruckelshaus Institute will be open to the public,



with opportunities for public comment. Information about the Ruckelshaus Institute is available on the web at www.uwyo.edu/enr.

USAHA, the nation's animal health forum for over a century, will serve as the host for the Workshop. USAHA is national, non-profit organization of state and federal governments, allied animal industry groups, universities, researchers, wildlife health experts and other national organizations that address issues of animal health and disease control, food safety, public health, homeland security and animal welfare. USAHA serves as a forum for communication and coordination and as a clearinghouse for new information and methods that may be incorporated into laws, regulations, policy and programs, and acts to develop solutions to animal health-related issues based on science, new information and methods, public policy, risk/benefit analysis, and the ability to develop consensus for changing laws, regulations, policies and programs. Information about USAHA is available on the web at www.usaha.org.



Veterinarian vaccinates bison with RB51. Photo by Jim Peaco

2004 GYIBC ANNUAL REPORT

Written by members of the Executive Committee,
Technical, and Information Education Subcommittees

Idaho Department of Fish and Game • Montana Department of Fish, Wildlife and Parks • Wyoming Game and Fish Department • Idaho Department of Agriculture
Montana Department of Livestock • Wyoming Livestock Board • U.S.D.A. Forest Service • U.S.D.A. Animal and Plant Health Inspection Service • U.S.D.A. Agricultural Research Service
U.S.D.I. Fish and Wildlife Service • U.S.D.I. National Park Service • U.S.D.I. Bureau of Land Management • U.S.D.I. National Biological Service

GYIBC is available on the Internet. Access the GYIBC Home Page by pointing your
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Cover Photo: *Elk and Bison in the National Elk Refuge, by Mark Gocke*